ORIGINAL ARTICLE

Development of Articulation Test in Garhwali Language: A Preliminary Study

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Abstract

Purpose: The present study aimed at the development of a test of articulation in the Garhwali language.

Method: A total of 550 meaningful Garhwali words with all phonemes in their naturally occurring positions, that is, initial, medial, and final were selected. A 5-point familiarity scale was used and was given to 10 Garhwali-speaking adults to rate the word list. Finally, the test includes 110 words. The articulation test was administered to 32 typically developing children in the age range of 3–7 years to obtain normative data. There were four groups such as 3.0–4.0 years, 4.1–5.0 years, 5.1–6.0 years, and 6.1–7.0 years. The mean articulation scores were obtained for each age group. The test material was administered 2 times to the same children to obtain the test–retest reliability. Further, the test was administered on three children with misarticulation to find the face validity.

Results: The results indicated that the mean articulation scores increased with an increase in age. The result also revealed that there were relatively lower scores for males than females in all age groups.

Conclusion: The present study concludes that the articulation test in the Garhwali language is useful and also will help in analyzing speech sound disturbances in Garhwali children.

Keywords: Age, Articulation, Language.

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Introduction

Garhwali is a Pahari language that belongs to the Northern Zone of Indo–Aryan languages. It is primarily spoken by people from the north-western Garhwal division of Uttarakhand in the Indian Himalayas. The Pahari languages include Garhwali and Kumauni. Devanagari is used as a script for Garhwali. Garhwali language has 10 vowels and 30 consonants in its phonemic system. Garhwali is one of the 325 familiar languages of India spoken by over 2,267,314 people in different districts of Uttarakhand such as Tehri Garhwal, Pauri Garhwal, Uttarkashi, Chamoli, Dehradun, Haridwar, and Rudraprayag. Garhwali is also spoken in some other parts of India including Himachal Pradesh, Haryana, Punjab, and Uttar Pradesh. According to various surveys, at least 2.5 million Garhwali migrants living in the Northern zone of India.[1] According to the Annual Health Survey 2015–2016 in Uttarakhand, the total prevalence of speech disorder in children and adults is 2% in which its value in urban areas is 0.4% and in rural areas is 3.5%.[2] The survey also mentioned an incidence rate of 0.8% per year.

Articulation refers to the motor process involved in the planning and execution of sequences of gestures that result in speech.[3] Misarticulation, the disturbances of speech sound productions, is probably the most common type of speech disorder in children. The speech and language pathologists differentiate the normal population from the abnormal group by administering appropriate articulation tests. Such a test may be used in deciding whether a child having articulatory problems and to aid in prescribing the nature of speech correction.[4] A child has an articulation disorder when their error patterns and/or sound acquisition sequence deviate from peer groups. Evaluation of children's articulation involves the description of his or her speech sound production and relating this to the normal or standard in the language and community. The articulation test is an assessment that provides information about the nature, number, and types of articulatory errors as they occur in a child's speech. The test of articulation is a basic tool for the speech and language pathologist. Babu et al. developed a Kannada diagnostic articulation test.[5] It is a four-part test with 52 and 49 picture words in parts I and II, respectively. Part III has 10 clusters. Part IV has a reading passage which is administered to subjects who can read. Part I tests 10 vowels in the initial position and not in the medial and final position as they can be influenced by the consonants preceding them. Part II is similar to part I but has different words with the same sounds being tested. Phonemes misarticulated in part I are tested in part II. Articulation tests also have been developed in different languages (Table 1) such as Tamil and Hindi.[6–8] Garhwali is one of the major languages spoken in north-western Garhwal division of Uttarakhand. Various

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Table 1: Summary of different articulation tests

S. No.	*Name of the test*	*Author*	*Age (years)*	*Materials*	*Procedure*
1.	Photo articulation test (PAT)	Pendergast et al.[8]	–	72 color photographs, 9 on each of 8 sheets of the PAT booklet. Each photo tests only one sound	The child is required to name each photo. No auditory visual stimulation is given for this section
2.	Templin–Darley tests of articulation	Templin and Darley[4]	–	141 items (diagnostic test) and 50 (screening test)	Materials were presented with no audio–visual articulation
3.	Edinberg articulation test (EAT)	Ingram et al.[9]	–	68 colors of pictures in their diagnostic test of articulatory abilities	The child is required to name the pictures
4.	Tamil articulation test	Usha[6]	3 and above	Test has 67 items in all the naturally occurring positions	No audio–visual stimulation and the pictures have to be named by the subject
5.	Test of articulation in hindi	Basavraj Vijayalakshmi and Kakpan Niranjini[7]	3 and above	All hindi speech sounds were included in all three positions	Naming of pictures

articulation tests have been developed in different languages in the Indian context.[9,10] However, there is no articulation test available in the Garhwali language because of this it is difficult to assess misarticulation in Garhwali-speaking children. Hence, there is a need to develop an articulation test in the Garhwali language to evaluate the articulatory errors.

Aim

The study aims to develop an articulation test in the Garhwali language.

Materials and Methods

The first phase involved the development of test stimuli in the Garhwali language. All the phonemes of the Garhwali language were selected for the development of the Garhwali articulation test. Initially, a list of 550 meaningful words (some phonemes do not occur in all the positions such as the initial, medial, and final position of the word), taken from newspapers and books, having all phonemes of Garhwali in all the naturally occurring positions were selected. A total of 15 words were taken for each phoneme having 5 words in each position, that is, initial, medial, and final. The words were verified by the linguist. A 5-point familiarity rating scale was used (not at all familiar, slightly familiar, somewhat familiar, moderately familiar, and extremely familiar) to ensure the familiarity of words. A word list was given to 10 Garhwali-speaking adults, who were proficient in reading, writing, and speaking the Garhwali language and had been exposed and trained on the language during their primary study career, also, were free from any speech and hearing deviations, to mark the familiarity of the words in their language. Each individual was instructed to mark the familiarity ranking of each word. The words which were found to be extremely familiar by 80% of the judges were considered in the list. Out of 550 words, 217 words were rated extremely familiar and were again given for familiarity rating to extract the final words list. A total of 110 words were included in the final test.

Normal participants were tested to form a baseline which was considered normative for this test. The test was conducted in a quiet environment. A total number of 32 children (4 males and 4 females in each age range) in the age range of 3.1–4, 4.1–5, 5.1–6.0, 6.1–7 years were selected for the study. They were selected based on the teachers'/parental interview. Ethical considerations were maintained and adhered to while selecting the participants and were instructed to follow the procedures that is to repeat the sounds as well as words just after the examiner. They are randomly selected based on inclusionary criteria such as all the children selected in the study were native speakers of Garhwali and had no hearing, speech, or language problems which were confirmed by ENT and audiologist and speech language pathologist. Children who have passed the hearing evaluation and receptive and expressive emergent language scale test were included in the present study.[10]

Informed consent was obtained from the caregivers/parents. Data collection was done in a quiet environment. Instructions were given verbally to the child. The child had to repeat the sounds and words after the clinician which was recorded in a digital recorder (Sony ICD-PX333). Responses were analyzed in terms of correct responses, substitution, omission, distortion, and addition. One score was given for each correct response and the total score for each subject was obtained.

Results and Discussion

The obtained scores of children with different age groups (3.14, 4.1–5.0, 5.1–6.0, 6.1–7.0 years) across gender were analyzed. The findings of the present study have been broadly presented and discussed under different headings.

Performances across Different Age Groups

It is observed from Table 2 that with the advancement in age, the articulation score improved. So, it can be said that articulation score is directly proportional to age. In younger children (3–4 years) the score was very low, which might be due to they are in the developmental age and were still in the process of acquisition of sounds.

Performances of Males and Females across Different Age Groups

Mean articulation scores were calculated for male and female children across different age groups (Table 2). Table 2 illustrates relatively lower scores for males than females in all age groups. It also shows that there is a relatively greater difference in performances across females and males in younger children than in elder children.

Table 2: Mean scores of male and female children in different age groups

Age group (years)	*Sex*	*Mean score (%)*	*Mean score (%) of second administration*
3.1–4	M	58	56
	F	65	65
4.1–5	M	84	85
	F	89	89
5.1–6	M	93	95
	F	96	95
6.1–7	M	99	100
	F	100	100

Reliability of the Test

To check the test-retest reliability, the same articulation test material was administered 2 times to the same child. A retest was carried out after the 2 days of first administration. The children were instructed to produce the sounds in isolation as well as in words. The scores obtained from each time were compared. Similar scores were obtained between the two tests which indicates the test is reliable.

Validity of the Test

Face validity was used to test the validity of the present test. The test was administered to three children with misarticulation. The scores obtained were compared with normal children. It was observed that the scores obtained by the misarticulated children were lesser than those of normal children which indicates the test can differentiate normal children from misarticulated children.

Conclusion

In conclusion, the articulation test in the Garhwali language distinguishes typically developing children from those children with articulation disorders. The articulation test in the Garhwali language includes 110 words for the assessment of the type of articulation errors in Garhwali-speaking children. Future studies may be directed towards standardization on a large population and validity testing on larger groups of participants with different types of speech sound errors.

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